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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
D AGOSTA, STEPHEN M	

ART UNIT	PAPER NUMBER
2683	

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/898,558	MIERNIK ET AL.	
	Examiner	Art Unit	
	Stephen M. D'Agosta	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,7-10,13-16,19-22 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *25* is/are allowed.

6)☒ Claim(s) *1-4,7-10,13-16,19-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 3-7-05 have been fully considered but they are not persuasive.

1. A new rejection is found attached – the examiner notes that claim 25 was allowed based on the fact that it provides a more detailed disclosure when compared to claims 1, 7, 13 and 19. These claims are written too broadly and hence can be broadly interpreted.

2. The primary reason(s) for the examiner's rejection is based on the teachings of Khan along with his disclosure of ATM technology. ATM uses service classes and statistical multiplexing to utilize any/all bandwidth as required. Hence multiple service classes (ie. First, second and third service classes as disclosed by the applicant) can have their data spread across their "allocated bandwidth" if another user has data to send and their bandwidth is idle or under utilized. ATM further has the ability to indiscriminately transmit voice and data (ie. bursty and non-bursty traffic) over the total bandwidth and reads on the applicant's claims as well.

3. After further review, a more favorable outcome may occur if the un-allowed independent claims are amended with their three dependent – eg. for independent claim 1, add the following:

"....wherein the second and third service classes comprise a lower priority than the first service class and wherein the unused voice bandwidth is used to accommodate the bandwidth requirement before using the unused bandwidth allocated to the third service (class)....."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 7-10, 13-16, 19-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Khan et al. US 6,400,954 and further in view of Fan et al. US 6,408,005 and Chiu et al. US 6,744,767 (hereafter Khan and Fan and Chiu).

As per **claim 1**, Khan teaches a method for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, and C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" and sharing over-allocated bandwidth between service classes comprising (C2, L65 to C3, L11 teaches "service classes, ATM and statistical multiplexing" which inherently provides means for sharing over-allocated bandwidth between service classes)

but is silent on

Transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a ~~second~~ third service class, and

transmitting traffic for a first service class in unused bandwidth remaining in a second service class in cases where a bandwidth requirement for the traffic is not met by using the unused bandwidth allocated to the third service class.

The examiner notes that Khan's disclosure of adapting the resources (reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. The examiner also points out that QoS systems view the total

bandwidth as a "pool" that can be divided in real-time depending upon network conditions and user needs, hence multiple service classes (eg. first, second, third, etc.) are supported. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (DRC scheduler, figure 3, #30) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on. Further to this point is **Chiu,** who teaches a different embodiment which provisions QoS on an IP network whereby a three-class differentiated service scheme uses a resource management system and schedule optimizer to enable optimal use of bandwidth and buffer resources along the links in the network (abstract) thus allowing each of the classes to optimally reach predetermined QoS criteria (which is interpreted as bandwidth allocation based on network conditions and user needs).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per claim 2, Khan in view of Fan/Chiu teaches claim 1 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC scheduler allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 3**, Khan in view of Fan/Chiu teaches claim 1 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 4**, Khan in view of Fan/Chiu teaches claim 1 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per **claim** 7, Khan teaches a system for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" and sharing over-allocated bandwidth between service classes comprising (C2, L65 to C3, L11 teaches "service classes, ATM and statistical multiplexing" which inherently provides means for sharing over-allocated bandwidth between service classes)

but is silent on

means for transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

means for, after transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, transmitting traffic for a third service class in unused bandwidth remaining in the second service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs means (eg. a dynamic rate controller scheduler, figure 3, #30) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on. Further to this point is **Chiu,** who teaches a different embodiment which provisions QoS on an IP network whereby a three-class differentiated service scheme uses a resource management system and schedule optimizer to enable optimal use of bandwidth and buffer resources along the links in the network (abstract) thus allowing each of the classes to optimally reach predetermined QoS criteria (which is interpreted as bandwidth allocation based on network conditions and user needs).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per **claim 8,** Khan in view of Fan/Chiu teaches claim 7 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 9**, Khan in view of Fan/Chiu teaches claim 7 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 10**, Khan in view of Fan/Chiu teaches claim 7 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per **claim 13**, Khan teaches a system for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class" and sharing over-allocated bandwidth between service classes comprising (C2, L65 to C3, L11 teaches "service classes, ATM and statistical multiplexing" which inherently provides means for sharing over-allocated bandwidth between service classes)

but is silent on

Logic encoded into media for sharing over-allocated bandwidth between service classes comprising:

transmit traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

after transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, transmitting traffic for a third service class in unused bandwidth remaining in the second service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (figure 3, #30) comprising logic encoded into media/hardware/software (C8, L10 to C9, L16) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused

bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to another service class which reads on the above limitations that Khan is silent on. Further to this point is **Chiu**, who teaches a different embodiment which provisions QoS on an IP network whereby a three-class differentiated service scheme uses a resource management system and schedule optimizer to enable optimal use of bandwidth and buffer resources along the links in the network (abstract) thus allowing each of the classes to optimally reach predetermined QoS criteria (which is interpreted as bandwidth allocation based on network conditions and user needs).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per **claim 14**, Khan in view of Fan/Chiu teaches claim 13 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 15**, Khan in view of Fan/Chiu teaches claim 13 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches

"...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 16**, Khan in view of Fan/Chiu teaches claim 13 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

As per **claim 19**, Khan teaches a system for supporting a plurality of service classes in a wireless/ATM network having sufficient and/or less sufficient resources/bandwidth based on their respective service class (C2, L65 to C3, L11, C3, L43-51 and figures 1-5) which reads on providing bandwidth to users based on "class"

and sharing over-allocated bandwidth between service classes comprising (C2, L65 to C3, L11 teaches "service classes, ATM and statistical multiplexing" which inherently provides means for sharing over-allocated bandwidth between service classes)

but is silent on

Logic encoded into media for sharing over-allocated bandwidth between service classes comprising:

transmit traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, and

after transmitting traffic for a first service class in excess of bandwidth allocated to the first service class using unused bandwidth allocated to a second class, transmitting traffic for the first service class in unused bandwidth remaining in the third service class.

The examiner notes that Khan's disclosure of adapting the resources reads on Quality of Service (QoS) which is known in the art as dynamically adapting bandwidth based on class of service and data throughput requirements. Further to this point is statistical multiplexing which can adapt instantaneously how much bandwidth is provided to a user. Lastly, wireless ATM is known in the art and Khan and Fan (below) both disclose use of their inventions in ATM networks.

Fan teachs a dynamic rate controller scheduler (figure 3, #30) comprising logic encoded into media/hardware/software (C8, L10 to C9, L16) that achieves high utilization by guaranteeing a minimum throughput and fairly distributes unused bandwidth (abstract, figure 9 and C5, L38-63). Fan's teaching thus allows unused bandwidth from any service class to be given to any other service class which reads on the above limitations that Khan is silent on – eg. any service class needing bandwidth can take from any other service class' bandwidth that is not being used.

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that unused bandwidth can be used by any other service class(es) (eg. first/third), to provide means for optimal throughput by utilizing unused bandwidth.

As per **claim 20**, Khan in view of Fan teaches claim 19 **but is silent on** wherein the third service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 21**, Khan in view of Fan teaches claim 19 **but is silent on** wherein the second service class comprises a lower priority than the first service class. Fan teaches that the DRC allocates unused bandwidth indiscriminately and can provide said unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers..").

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that the unused bandwidth can be assigned to lower priority user(s), to provide means for any user class to be given any unused bandwidth when required and available.

As per **claim 22**, Khan in view of Fan teaches claim 19 **but is silent on** wherein the second class comprises the lowest priority that has unused bandwidth. Fan teaches that the DRC allocates the unused bandwidth to any user/class of service that requires it (abstract teaches "...the distribution of unused bandwidth can be assigned flexibly, ie. need not be shared in proportion to the minimum throughput guarantees as in weighted fair share schedulers).

It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to modify Khan, such that any lowest class that has unused bandwidth can be used, to provide means for any user class' unused bandwidth to be allocated to another when required and available.

Allowable Subject Matter

1. Claim 25 allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. D'Agosta whose telephone number is 571-272-7862. The examiner can normally be reached on M-F, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen D'Agosta
PRIMARY EXAMINER
3-28-2005